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# Business Process Management



# Objectives

- At the end of this session you should have a good understanding of:
  - The benefits of a BP management approach
  - Standards and tools for Business Process Management
  - BPEL

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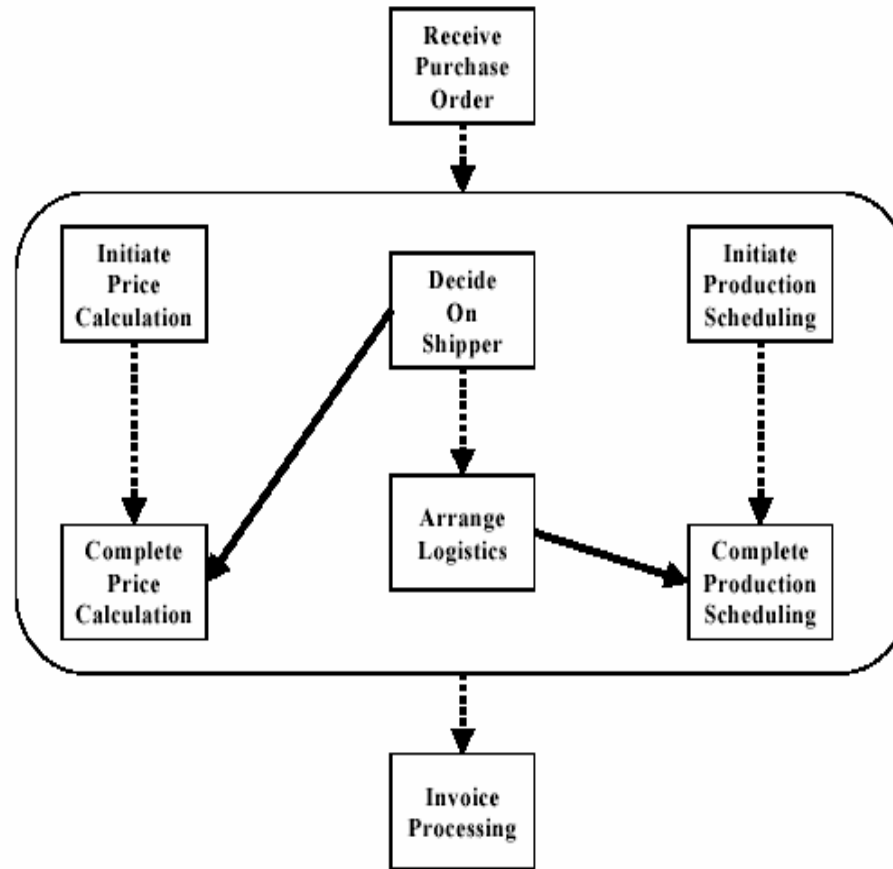


# Adam Bosworth, Google

- "Alan Kay is supposed to have said that simple things should be simple and hard things should be possible. It has been my experience over 25 years of software development that for most software products, *simple things should be declarative and/or visual* and hard things should be procedural."

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# A sample business process



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# Orchestration vs Choreography

# Orchestration



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# Choreography



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# A British analogy



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<http://blog.whatfettle.com/archives/000250.html> - Paul Downey's weblog



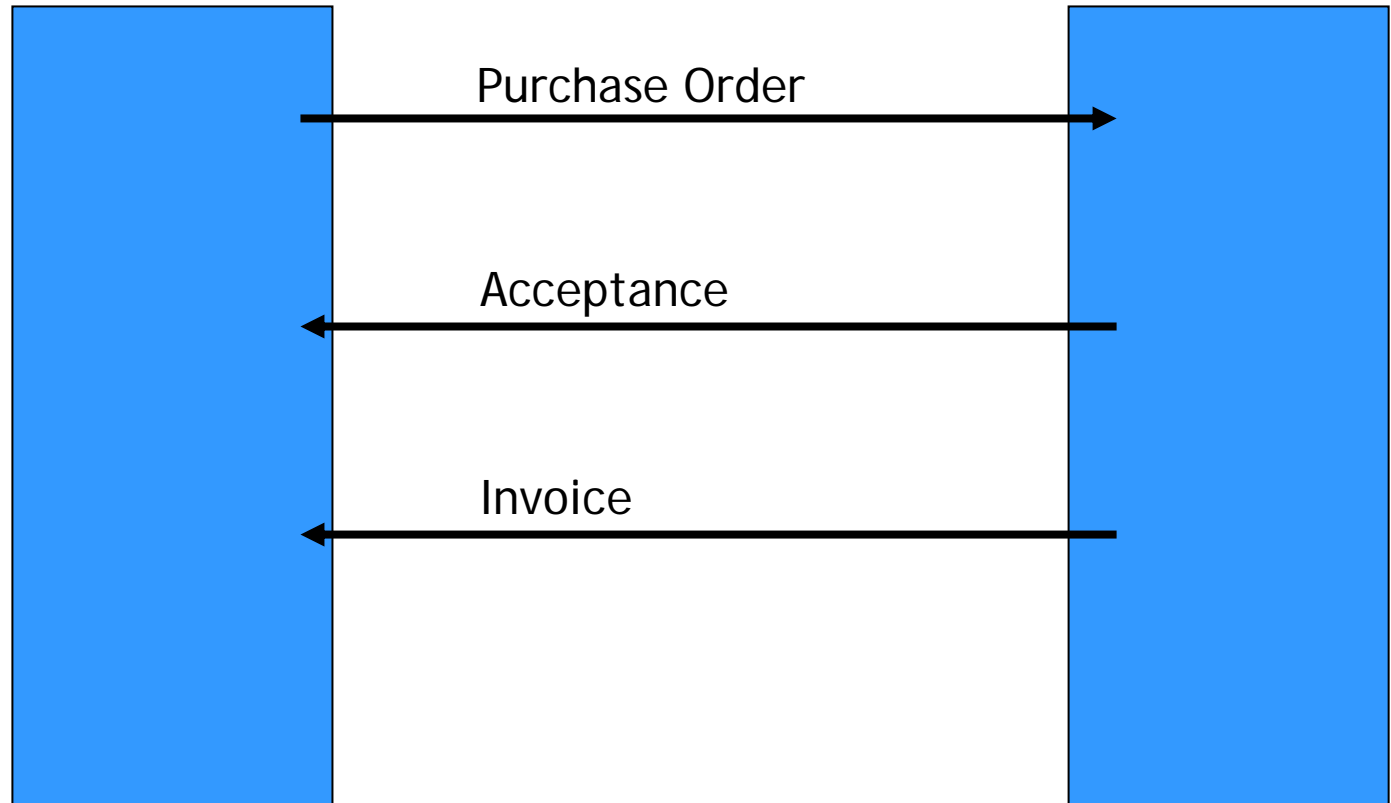


# In words

- Orchestration
  - Direct control of the business process by a system – also known as *workflow*
- Choreography
  - Loosely coupled definition of how parties interact
  - The interactions between systems not the implementation of those systems

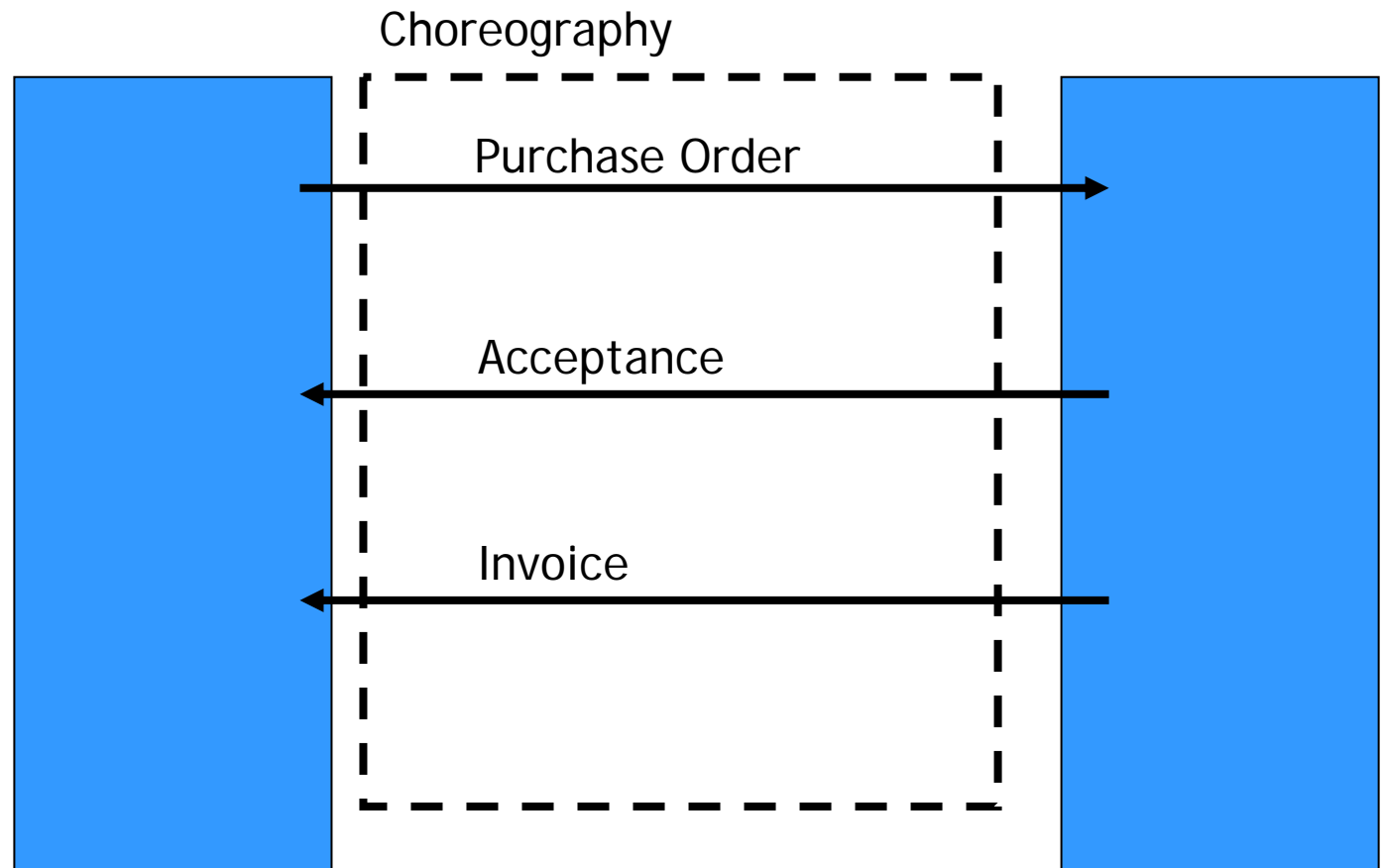
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# Business Process



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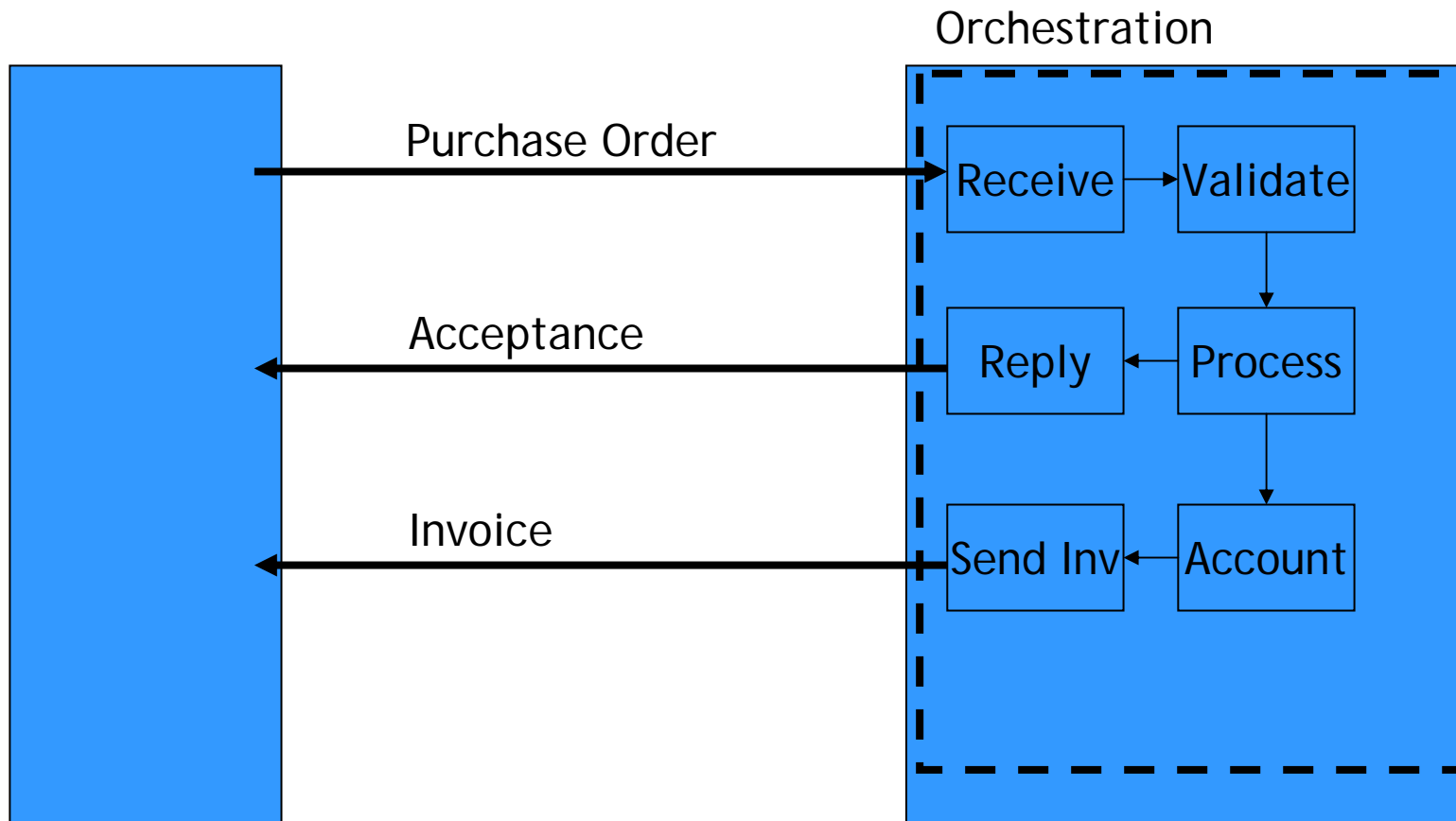
# Business Process



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# Business Process



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# Aims of using Business Process

- Simple model:
  - Use a model that the business understands:
  - Business Process flows are *readable*
- Cleaner architecture
  - Build a layer of abstraction between the *services* and the *process*
  - But the services may be processes themselves!
- Better manageability
  - A process manager should be able to give data to a Business Monitor/Dashboard
- Faster time to market
  - More reuse of existing services
  - Simple graphical modeling

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# Standards

- Two main contenders
  - Web Services Choreography Description Language
    - <http://www.w3.org/TR/ws-cdl-10/>
    - A global perspective
  - Business Process Execution Language
    - [http://oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=wsbpel](http://oasis-open.org/committees/tc_home.php?wg_abbrev=wsbpel)
    - A local perspective – orchestration
    - Some support for choreography (Abstract processes)

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# Focus on BPEL

- We are going to focus on BPEL:
  - Wider support from vendors and community
  - More practical
    - You can run it!
  - A good starting point for real-world SOA

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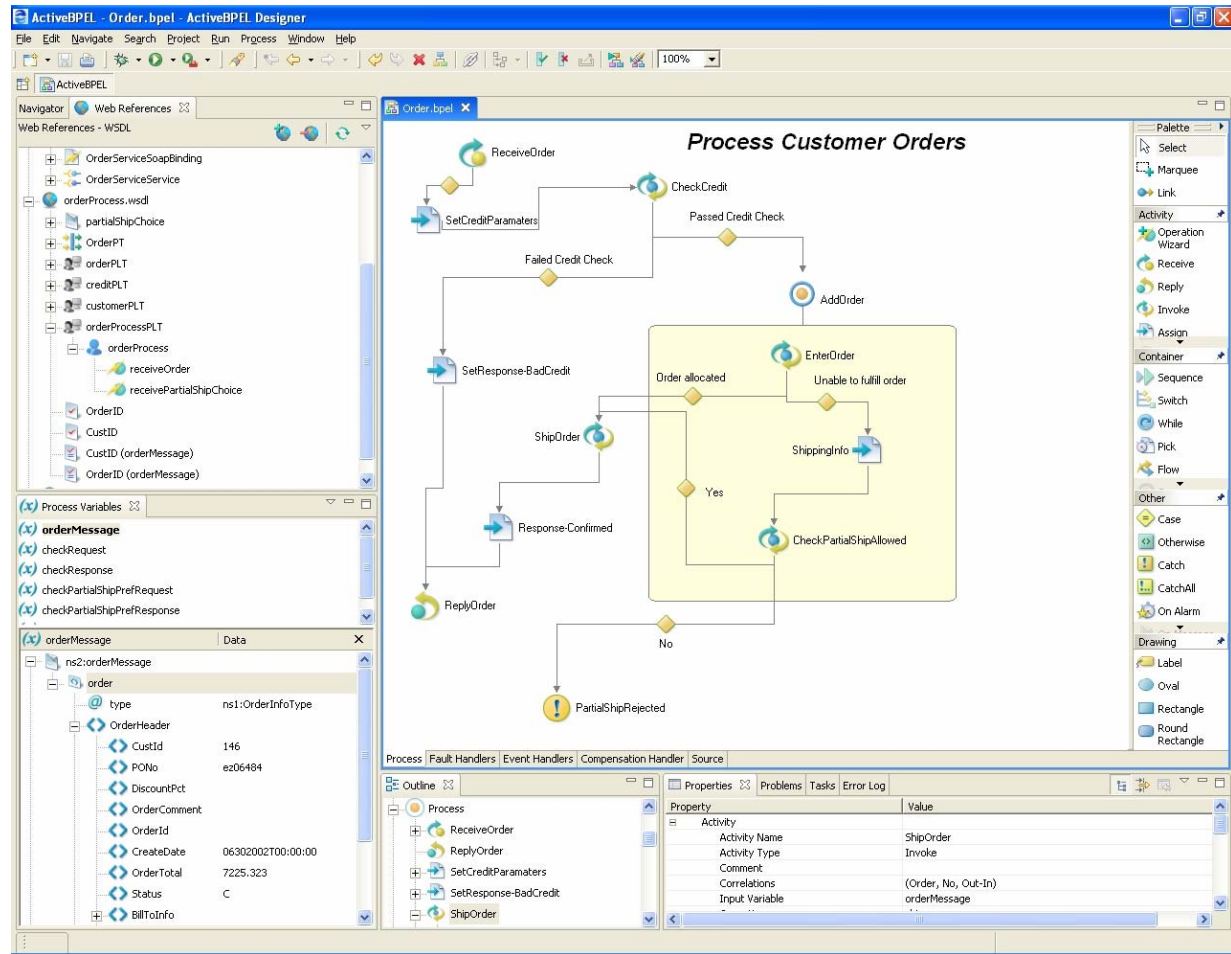


# Business Process Execution Language

- A specification created by IBM, Microsoft + others
  - BPEL 1.1
- Currently implemented in
  - WebSphere Business Process Server
  - Microsoft Biztalk
  - ActiveEndpoints BPEL server
  - + others
- Submitted to OASIS
  - BPEL 2.0

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# What is BPEL?







# BPEL

- Allows organisations to build and deploy robust processes
  - Faster
  - Simpler
  - More maintainable
- Tooling allows analysts to create processes graphically
  - That integrate existing services in the organisation and outside
- BPEL is SOA in action

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# High level BPEL constructs

- Partner Links
- Receive and Reply
- Invoke
- Variables

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# PartnerLinks and PLTypes



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# Partner Links

- Used to define links with the process:
  - Parties that call this process
  - Parties that are called by this process
  - Parties that both call and are called
- Each side has a Role
- There may be multiple links with the same interface
  - For example in managing an RFP, a process may call multiple companies to get a quotation

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# <partnerLinks>

<partnerLinks>

<partnerLink

name="stockMarket"

myRole="investor"

partnerLinkType="sq:QuoteType"/>

</partnerLinks>

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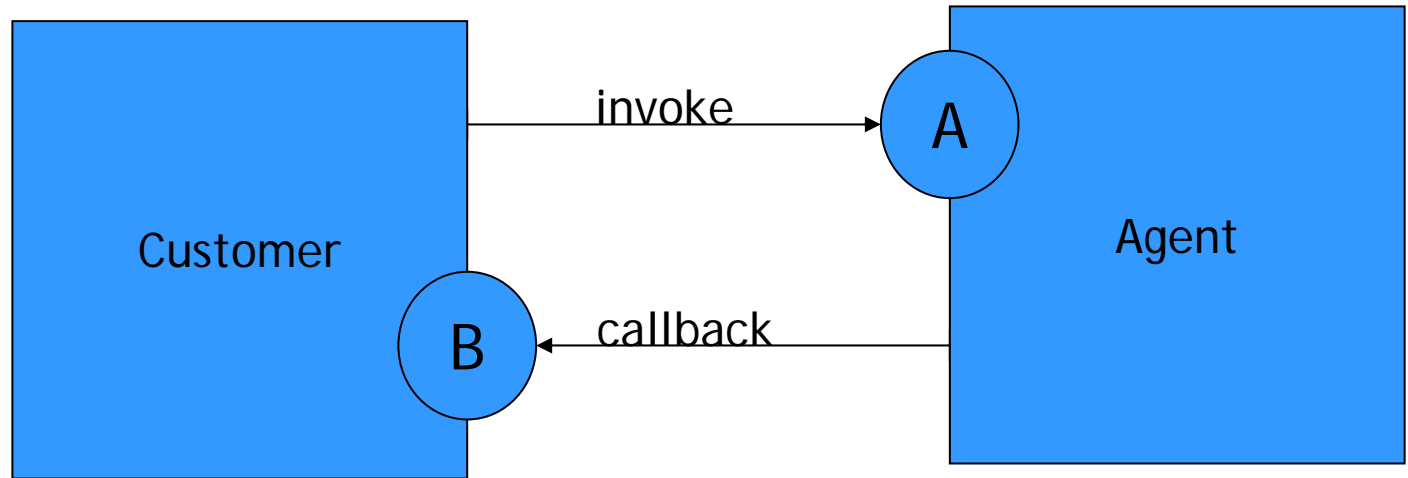
# Partner Link Types

- Outside the .bpel file
  - Additional tags inserted into WSDL
- How two parties interact
  - And what services they offer

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# Partner Link Types



What the interface is depends on which way you are looking!

Customer offers B and requires A

Agent offers A and requires B



# Calling another Web Service

- The whole point of BPEL
- The <invoke> tag specifies
  - The partnerLink
  - The interface (porttype)
  - The operation
  - The input
  - What to do with the output

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# How does a BPEL process start?

- Someone invokes it
- How do they invoke it?
  - Through a service definition
- In other words, the process <receive>s a message

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# <receive>

```
<receive partnerLink="client"  
  portType="proc:purchase"  
  operation="buyStuff"  
  variable="purchaseOrder"  
  createInstance="yes" />
```

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# <reply>

```
<reply partnerLink="client"
  portType="proc:purchase"
  operation="buyStuff"
  variable="purchaseOrder"
/>
```

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# <variables>

```
<variable name="..."  
  messageType="..."  
  type="..."  
  element="..."
```

WSDL Message or  
schema type or  
schema element

```
/>
```

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# Assigning data

- Copying data from one variable to another

<assign>

<copy>

<from>...</from>

<to>...</to>

</copy>

</assign>

Can *extract* data using XPath

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# Process

- We've covered:
  - <receive>ing a request
  - <copy>ing data into <variable>s
  - <invoke>ing another service
  - <reply>ing
- Which is fine if your processes don't do much of interest

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# Structuring activities

- **<sequence>** - do things in order
- **<flow>** - do things in parallel/asynchronously
- **<switch>** **<case>** - do one option
- **<wait>** - hold on until time or for duration
- **<pick>** - opposite of flow - choose a single response
- **<link>** - control the flow of activities
- **<while>** - loop
- **<scope>** - define scopes with fault/event handlers - allows structuring

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# Scopes

- High level structures
  - Used to define transaction boundaries
    - Fault handling
    - Compensation
- Allows a BPEL process to fit in with a transaction strategy
- Allows easy structuring of failure cases

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# Business Process Monitoring

- A good Business Process **Manager** also supports Business Process **Monitoring**
- Because the high level process is designed as a loosely coupled flow, its possible to monitor it at a business level
- The result is a business **dashboard**
  - Can identify bottlenecks
  - Help understand how the system is used and how the process is used
  - Monitor the business at the right level
  - A management console for managers

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# Value of BP over code

1. Do simple things simply
2. Visualization helps involve the business team
3. Clear definition of partnerlinks helps understand dependencies
4. Improves re-use of services
5. Declarative support for failure cases and compensation
6. Supports Built-in Process Monitoring

***BUT!***

Don't use it everywhere... its designed as the glue





# Summary

- Business Process Management
  - Enables faster time to market
  - Re-uses services more easily
  - Helps the business monitor
  - Increases the alignment of IT to the business

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# Resources

- OASIS TC
  - [http://www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=wsbpel](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsbpel)
- BPEL resources
  - [http://searchwebservices.techtarget.com/originalContent/0,289142,sid26\\_gci880731,00.html](http://searchwebservices.techtarget.com/originalContent/0,289142,sid26_gci880731,00.html)

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# Questions?



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